Small Business Innovation Research/Small Business Tech Transfer

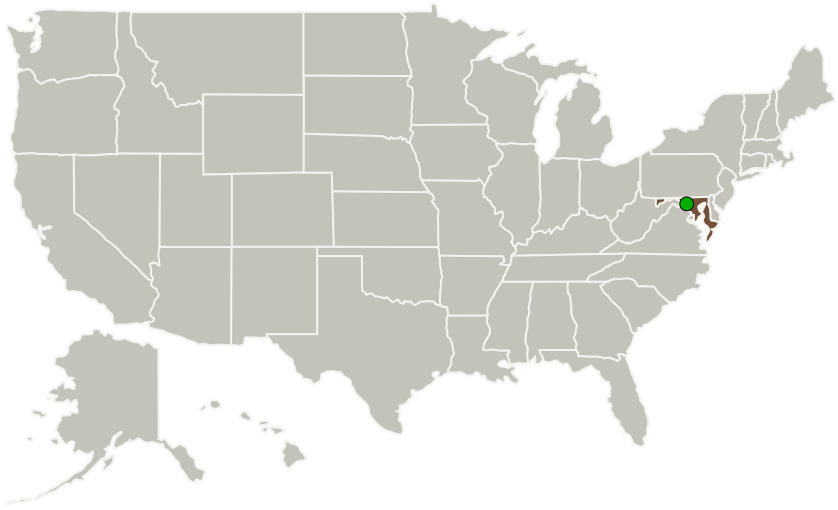
GNSS Reflectometer Instrument for Bi-static Synthetic Aperture Radar (GRIBSAR) Measurements of Earth Science Parameters, Phase I

Completed Technology Project (2015 - 2015)

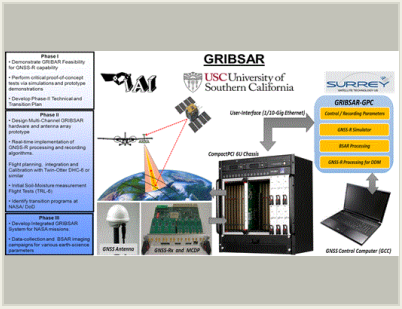
Project Introduction

Global Navigation Satellite System (GNSS) signals scattered from ocean, land and ice are affected by the reflecting surface, and hence the changes induced by the surface can be observed. The full-time operation of radio navigation satellites system, abundant global signal coverage and spread spectrum communication for flexible signal processing makes GNSS reflected signals a viable candidate for Signal-Of-Opportunity (SOO) passive sensing. Existing research has shown that GNSS-Reflectometry (GNSS-R) based remote sensing has the potential to give environmental scientists a low-cost, wide-coverage measurement network that will greatly increase our knowledge of the Earth's environmental processes. The Intelligent Automation, Inc. (IAI) team proposes to develop a GNSS Reflectometer Instrument for Bi-static Synthetic Aperture Radar (GRIBSAR) for measuring earth science parameters. Our proposed approach is modular, scalable and meets the NASA goals of multi-channel, GNSS-R system to exploit GNSS reflected signals as SOO.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Intelligent Automation, Inc.	Lead Organization	Industry	Rockville, Maryland
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



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Primary U.S. Work Locations
Maryland

Project Transitions

June 2015: Project Start

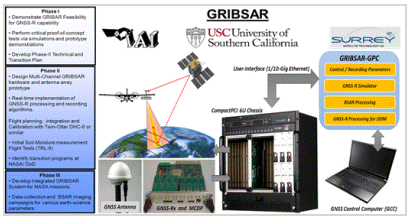
December 2015: Closed out

Closeout Summary: GNSS Reflectometer Instrument for Bi-static Synthetic Ap erture Radar (GRIBSAR) measurements of earth science parameters, Phase I Pr oject Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138893)*

Images



Briefing Chart Image
GNSS Reflectometer Instrument for Bi-static Synthetic Aperture Radar (GRIBSAR) measurements of earth science parameters, Phase I *(https://techport.nasa.gov/image/129875)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Intelligent Automation, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Arvind Bhat

Co-Investigator:

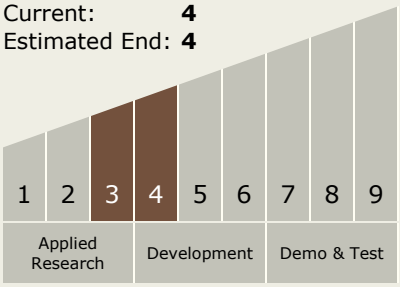
Arvind Bhat

GNSS Reflectometer Instrument for Bi-static Synthetic Aperture Radar (GRIBSAR) Measurements of Earth Science Parameters, Phase I

Completed Technology Project (2015 - 2015)

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System